WHAT IS CLAIMED IS:

1. A transmitter for use in a multicarrier communication system, the transmitter for transmitting a multicarrier symbol, the multicarrier symbol having a peak-to-average power ratio (PAR) and being a function of a plurality of information signals, the transmitter comprising:

(a) a power reducer, wherein the power reducer is operative to reduce the PAR of the multicarrier symbol by modifying a selected information signal of the plurality of information signals wherein the modified signal includes an information component, a peak reduction component, and a transmission channel response component.

2. The transmitter according to claim 1 wherein said power reducer comprises:

means for analyzing the multicarrier symbol to detect a peak in the multicarrier symbol;

means for determining a first signal of the plurality of signals that contributes to the peak; and

means for modifying the first signal by applying a peak reduction component to the first signal, the peak reduction component including a transmission channel component such that by the PAR of the multicarrier symbol is reduced to compensate for the transmission channel effects on the power of the symbol.

3. A method for reducing the peak-to-average ratio (PAR) of a multicarrier communication system, wherein the multicarrier symbol is a function of a plurality of signals, each of the plurality of signals centered at each one of a plurality of frequencies, the method comprising:

(a) analyzing the multicarrier symbol to detect a peak in the multicarrier symbol;

(b) determining a first signal of the plurality of signals that contributes to the peak; and

(c) modifying the first signal by applying a peak reduction component to the first signal, the peak reduction component including a transmission channel component such that by the PAR of the multicarrier symbol is reduced to compensate for the transmission channel effects on the power of the symbol.

4. A method as defined in claim 3, wherein said transmission channel effects represent an impulse response of the transmission channel.

5. A method as defined in claim 3, said transmission channel component including transmission filters, and said impulse response being the impulse response of said filters.

6. A transmitter for use in a communication system, the transmitter transmitting a signal where the transmitted signal has a peak to average power ratio and is a function of a plurality of information symbols, each symbol being transmitted at each one of a plurality of intervals of time, a selected information symbol of the plurality of information symbol including an information component and a peak reduction component and wherein the peak reduction component is modified to compensate for transmitted filter responses in the transmitter and wherein the modified peak reduction component modifies the information component and reduces the peak to average ratio of the transmitted signal.

7. A transmitter for use in a multicarrier communication system where a symbol transmitted by a transmitter has peak to average power ratio as a function of a plurality of signals, each one of the plurality of signals being centered at one of plurality of frequencies wherein a subset of the plurality of signals are configured to reduce the PAR before the symbol is transmitted along a transmission channel and where the subset of signals are further configured to include a response of the transmission channel.

8. A transmitter as defined in claim 7, including:

(a) an encoder for encoding a first set of data into a plurality of sets of data;

(b) a modulator coupled to the encoder for receiving the plurality of sets of data and (c) modulating each set of data of the plurality of the sets of data to produce the plurality of signals which are combined;

(c) a first inverse Fourier transformer coupled to the modulator, the inverse Fourier transformer operative to perform an inverse Fourier transform on the combined plurality of signals producing a transformed signal;

(d) a first power reducer coupled to the inverse transformer, wherein the power reducer is operative to analyze the transformed signal and to detect any peaks in the transformed signal, and if a peak is detected, the power reducer being operative to apply a kernel to the peak of the transformed signal by adjusting the kernel, wherein the kernel is an approximation of an impulse response generated from the subset of the plurality of signals such that the kernel is adjusted by scaling and time shifting; and

(e) a second power reducer coupled to receive a weighted transformed signal and a weighted kernel for analyzing the weighted transformed signal and for detecting any peaks therein if a peak is detected, the second power reducer being operative to apply the weighted kernel to the weighted transformed signal by applying scale and shift values to the weighted kernel such that said scale and shift values are used by said first power reducer for respectively scaling and time shifting said kernel, such that said weighting includes the effects of said transmission channel.

9. A transmitter as defined in claim 7, further including:

(f) a cyclic prefix insertion module coupled to said inverse Fourier transformer;

(g) a filter for receiving an output from said cyclic prefix insertion module; and

(h) a power reducer coupled to the output of said filter, wherein the power reducer is operative to analyze the output from said cyclic prefix model to detect peaks in the signal, and if a peak is detected, the power reducer is operative to apply a modified kernel to the peak of the signal by adjusting the modified kernel wherein the kernel is an approximation of an impulse response generated from the subset of the plurality of signals such that the kernel is adjusted by modifying the subset of plurality of signals and wherein the kernel is further modified using the impulse response of the filter to produce the modified kernel whereby the effect of the filter is included in the reduced PAR of the symbol.

10. A transmitter as defined in claim 8, wherein the transmitter is an XDSL transmitter.

11. A transmitter for transmitting a Discrete Multi Tone (DMT) signal comprising:

(a) a kernel generator for generating a kernel signal for reducing peaks of said DMT signal;

(b) a PAR reducer for modifying the phase and amplitude of said kernel signal and adding it to said DMT signal; and

(c) at least one filter for filtering said DMT signal;

wherein said kernel generator is operative to reduce the peaks of said DMT signal such that the PAR is reduced after said filter.